Billing Code 6355-01-P

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1407

Portable Generators; Final Rule; Labeling Requirements

AGENCY: Consumer Product Safety Commission.

ACTION: Final Rule.

SUMMARY: The Consumer Product Safety Commission (Commission or CPSC) is issuing a final rule requiring manufacturers to label portable generators with performance and technical data related to performance and safety. The required warning label informs purchasers that: "Using a generator indoors CAN KILL YOU IN MINUTES;" "Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell;" "NEVER use inside a home or garage, EVEN IF doors and windows are open;" "Only use OUTSIDE and far away from windows, doors, and vents." The warning label also includes pictograms. The Commission believes that providing this

Submitted on January 5, 2007 for publication in the Federal Register.
Todd A. Stevenson

safety information will help reduce unreasonable risks of injury associated with portable generators.[1]

EFFECTIVE DATE: The requirements of this regulation become effective for any portable generator manufactured or imported on or after [**insert date that is 120 days after publication**].

FOR FURTHER INFORMATION CONTACT: Timothy P. Smith, Project Manager, Division of Human Factors, Directorate for Engineering Sciences, Consumer Product Safety Commission, 4330 East-West Highway, Bethesda, Maryland; telephone (301) 504-7691; or email: tsmith@cpsc.gov.

SUPPLEMENTARY INFORMATION:

A. Background

The total yearly estimated non-fire related carbon monoxide (CO) deaths for each of the years 1999 through 2002 are 109, 138, 130 and 188, respectively. Since 1999, the percentage of estimated CO poisoning deaths specifically associated with generators has been increasing annually. In 1999, generators were associated with 7 (6%) of the total yearly estimated CO

---

[1]Acting Chairman Nancy A. Nord and Commissioner Thomas H. Moore each filed a statement. The statements are available from the Office of the Secretary or on the Commission's Web site at *http://www.cpsc.gov.*

poisoning deaths for that year. In 2000, 2001 and 2002, they were associated with 19 (14%), 22 (17%) and 46 (24%) deaths out of the total estimates for each of those years.

On October 12, 2005, the staff was directed to undertake a thorough review of the status of portable generator safety. As part of this review, the staff was requested to assess the sufficiency of warning labels to address the CO poisoning hazard posed by portable generators that are used within or near residences. In response to this request, CPSC staff prepared a draft notice of proposed rulemaking (NPR), in which the staff proposed that manufacturers be required to label portable generators with a CO-poisoning warning label. On August 15, 2006, the Commission voted unanimously (2-0) to approve the publication of a *Federal Register* notice issuing an NPR for portable-generator labeling requirements. This notice was published August 24, 2006. 71 FR 50003.

B. The Product

Portable generators offer a means of providing electrical power to a location that either temporarily lacks it or is not provided with electrical service at all. A portable generator has an internal combustion engine to produce rotational energy, which is used to generate electricity. The engine may be fueled by gasoline, diesel, natural gas, or liquid propane. It is the engine that produces carbon monoxide as a byproduct of combustion.

Estimates of sales of portable generators for consumer use vary, but could be more than a million units annually. The most popular of these generators are gasoline-powered and are priced in the $500 to $800 range. The output of the majority of light duty generators sold to consumers in 2005 was in the 3.5 kW to 6.5 kW range. This is the size of most of the units involved in the fatal CO poisoning incidents CPSC staff investigated in which the rating of the involved generator was identified.

C. Relevant Statutory Provisions

Section 27(e) of the Consumer Product Safety Act (CPSA) authorizes the Commission, by rule, to "require any manufacturer of consumer products to provide the Commission with such performance and technical data related to performance and safety as may be required to carry out the purposes of this Act, and to give such notification of such performance and technical data at the time of original purchase to prospective purchasers and to the first purchaser of such product for purposes other than resale, as it determines necessary to carry out the purposes of this Act." As provided in section 2(b)(1) of the Consumer Product Safety Act (15 U.S.C. 2051(b)(1)), one purpose of the CPSA is "to protect the public against unreasonable risks of injury associated with consumer products."

Failure to comply with a rule under section 27(e) is unlawful under section 19(a)(8) of the CPSA. 15 U.S.C. § 2068(a)(8). Any person who knowingly violates this requirement is subject to a civil penalty of up to $8,000 per violation. 15 U.S.C. § 2069; 64 FR 51963.

D. Explanation of the Rule

In 2002, CPSC staff assessed the effectiveness of current CO poisoning warnings found on the product and within the owner's manuals of several models of portable generators found on store shelves. Staff found that the guidance provided for avoiding the hazard was typically twofold: (1) do not use in a confined or enclosed space, and (2) provide proper ventilation. None of the evaluated warnings defined "confined or enclosed space" or "proper ventilation."

The Commission believes these instructions and warnings do not adequately advise users how to avoid the CO poisoning hazard. Furthermore, the incident data includes fatalities where it appears that the victims attempted to provide adequate ventilation, to open confined areas, or to do both by, for example, opening doors, opening windows, and running exhaust fans. Prior research has shown that tools with gasoline-powered engines produce CO that "can rapidly

accumulate, even in areas that appear to be well-ventilated, resulting in dangerous and fatal concentrations within minutes."[2] Thus, evidence suggests that the methods consumers typically use to provide ventilation or to open confined areas are insufficient to prevent hazardous levels of CO buildup. Even locating a generator outdoors can be insufficient if the generator is near enough to openings to the home or other occupied structure to allow CO to permeate and subsequently accumulate indoors. CPSC is aware of at least 5 deaths that occurred when a generator was situated outdoors but near openings to the home. In addition, the Centers for Disease Control and Prevention recently reported the results of a study of post-hurricane related generator use in 2005 that found up to 50% of non-fatal CO poisoning incidents involved generators operated outdoors but within one to seven feet from the home.[3]

The Commission believes that there are too many unknown variables to be able to recommend one single safe distance for the location of a portable generator relative to a home

---

[2]Earnest, G.S., *Carbon Monoxide Poisonings from Small, Gasoline-Powered, Internal Combustion Engines: Just What is a "Well-Ventilated Area"?,* American Industrial Hygiene Association Journal, November 1997.

[3]CDC, *Carbon Monoxide Poisoning After Two Major Hurricanes--Alabama and Texas, August - October 2005,* MMWR March 10, 2006; 55(09); 236-239.

or dwelling. Variables such as the wind speed and direction relative to openings to indoor spaces, relative proximity of other structures in the area that could create wind vortices, direction in which the engine exhaust is pointing, and a multitude of other factors complicate attempts to define a safe distance. Notwithstanding the issue of defining a safe operating distance, the Commission believes that warning labels must instruct consumers to keep generators outdoors and away from air intakes during use.

In 2003, the staff developed recommended warning language for engine-driven tools, with particular focus on portable generators, as a follow-up to the staff's assessment of the inadequacy of current warnings. This was later provided to the Underwriters Laboratories (UL) voluntary standard development committee. In February 2006, staff developed a further refined warning label for portable generators and presented it to UL in response to their request for CPSC staff comments on a proposed UL Outline of Investigation. UL incorporated staff's proposed warning label into their Outline of Investigation, which became effective April 2006 and serves as the requirements with which a product must conform in order to be eligible to bear the UL mark. This document is not a consensus standard.

The Commission believes a final rule is needed to ensure that all products will bear the proposed warning label as opposed to only those that seek UL's mark.

E. Description of the Rule

The warning label appears at fig. 1 (and fig. 3 for the on-package label). The warning label provides technical data, i.e., it indicates the presence of carbon monoxide in the portable generator exhaust and informs that carbon monoxide is a poison you cannot see or smell. The label uses the phrase "you cannot see or smell" rather than terms such as "odorless" and "colorless," because the latter terminology may be less familiar and understandable to some consumers.

The label also includes statements which connect the technical data with safety concerns. Specifically, the label warns: "Using a generator indoors CAN KILL YOU IN MINUTES." The phrase "in minutes" is intended to emphasize the imminence of the carbon monoxide poisoning hazard to provide consumers with a better understanding of the speed with which incapacitation can occur. In addition, research indicates that information about hazard scenarios affects consumers' risk judgments. Thus, the label includes a description not just of the hazard, carbon monoxide, but of

the primary hazard scenario associated with CO-poisoning deaths, i.e., using a generator indoors. The label also warns, "NEVER use inside a home or garage, EVEN IF doors and windows are open." The label warns specifically against use in the home and in garages, since these are known places in which consumers have used generators. The label includes prescriptive advice to "Only use OUTSIDE and far away from windows, doors, and vents," so consumers can know what positive action they can take to avoid the hazard, rather than focusing exclusively on prohibited behaviors, or what consumers should not do. This is consistent with the requirements of ANSI Z535.4-2002, which is the primary U.S. voluntary consensus standard on product safety signs and labels, and with warning design guidelines in general. The accompanying pictograms are based on the pictograms developed by the Underwriters Laboratories Standards Technical Panel. Research shows that labels with pictograms tend to capture a consumer's attention more readily than a label without pictograms.

F. Unreasonable Risk of Injury

Portable generators are powered by gasoline, diesel, or propane engines and exhaust CO. If the generator is used in enclosed or even partially enclosed spaces, the CO can very

quickly build to hazardous levels. Serious injury can also result when the generator is placed outdoors but near an open window or vent and the exhaust is pulled into a house. In the 6-year period from 2000 through 2005, the Commission is aware of at least 222 deaths related to CO poisoning associated with generators.[4] Non-fatal CO injuries can have serious consequences since permanent brain or neurological damage can result.

---

[4]Natalie E. Marcy and Debra S. Ascone, "Incidents, Deaths and In-Depth Investigations Associated with Carbon Monoxide from Engine-Driven Generators and other Engine-Driven Tools, 1990-2004," CPSC Memorandum to Janet Buyer, Directorate for Engineering Sciences, U.S. Consumer Product Safety Commission, Washington, DC (1 December 2005) and Robin L. Ingle, "Non-fire Carbon Monoxide Fatalities Associated with Engine-Driven Generators and Other Engine Driven Tools in 2004 and 2005," CPSC Memorandum to Janet Buyer, Directorate for Engineering Sciences, U.S. Consumer Product Safety Commission, Washington, DC (3 January 2006).

A well-designed warning label should inform the consumer of the CO hazard associated with generators and how to avoid the hazard while using the generator. A label placed in a prominent position on the generator is expected to reinforce this information each time the consumer used the generator. For example, the proposed label reminds the consumer that generator exhaust contains CO, which cannot be seen or smelled, and can quickly kill. The label also clarifies that a generator should only be used outside and far away from windows and vents and should not be used inside a home or garage. This information is important since some consumers have apparently been aware that a CO hazard was associated with generators, but believed that they would avoid the hazard by running the generator in a garage with the door open or outside the house, and did not understand that it was necessary to place it away from open windows and vents.[5] The costs of a warning label include the one-time cost of designing the label and the continuing costs of printing and applying the labels to the generators and packages. These costs are expected to be low - less than one dollar per generator. Based on the hazards

[5]Timothy P. Smith, "Human Factors Assessment for the Small Engine-Driven Tools Project," CPSC Memorandum to Janet L. Buyer, U.S. Consumer Product Safety Commission, Washington, DC (18 June 2002).

associated with carbon monoxide poisoning from portable generators, and the low cost of labeling generators, the Commission finds that there is an unreasonable risk of injury associated with portable generators.

G. Environmental Considerations

The National Environmental Policy Act and the Council on Environmental Quality Act regulations and CPSC procedures for environmental review require the Commission to assess the possible environmental effects associated with the labeling requirement for portable generators. Labeling rules are not expected to have an adverse impact on the environment and are considered to fall within the "categorical exclusions" for the purposes of the National Environmental Policy Act according to the CPSC regulations that cover its "environmental review" procedures (16 CFR Part 1021.5(c)(2)). Thus, the Commission concludes that no environmental assessment or environmental impact statement is required in this proceeding.

H. Impact on Small Business

When an agency issues a final rule such as the labeling requirement for portable generators, the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996, 5 U.S.C. 601 et

seq., generally requires the agency to prepare a final regulatory flexibility analysis describing the impact of the rule on small businesses and other small entities. Section 605 of the RFA provides that an agency is not required to prepare a regulatory flexibility analysis if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.

The Commission's Directorate for Economic Analysis prepared a preliminary assessment of the impact of a rule to require labeling on portable generators. That assessment reported that, while small manufacturers will be responsible for ensuring that their generators are properly labeled, the labeling requirement is not expected to pose a significant burden to small business because the cost of adding the labels per generator is expected to be less than a dollar per generator set. The incremental cost of the rule issued today is likely to be minimal.

Based on the foregoing assessment, the Commission certifies that the rule issued today to require labeling for portable generators will not have a significant adverse impact on a substantial number of small businesses or other small entities.

I. Executive Order 12988

As provided for in Executive Order 12988 (February 5, 1996), the CPSC states that the preemptive effect of these regulations is as follows. The preemption provisions of section 26 of the CPSA apply only to "consumer product safety standards." By definition in the CPSA, section 27(e) rules are not consumer product safety standards. There is, therefore, no express preemption for a final rule under section 27(e) of the CPSA. Preemption of state requirements could still occur if, for example, it is impossible to comply with both this rule and a state requirement.

J. Effective Date

Part 1407 requires a label on any portable generator manufactured or imported on or after **[insert date that is 120 days after publication of the final rule].**[6]

K. Response to Comments on the NPR

In response to the *Federal Register* notice proposing labeling requirements for portable generators, the Commission received 19 comments. The comments were largely positive and supported the proposed labeling, but two comments explicitly requested that the Commission withdraw the NPR. Many of the comments, even those that supported

[6]Note that the rule does not apply to any portable generator that is an "accessory" to a motor vehicle as defined in 49 U.S.C. § 30102(a)(7).

the general intent and approach of the rule, raised specific issues or concerns.

1. Procedural Issues and Choice of Statutes

Comments: Two comments claim that the Federal Hazardous Substances Act (FHSA), not the CPSA, is the appropriate statute under which to address through labeling the CO-poisoning risk associated with portable generators. If, as the commenters claim, the risk of injury is one which could be eliminated or reduced by action under the FHSA, then the Commission, pursuant to section 30(d) of the CPSA, would have been required to find by rule that it was in the public interest to regulate the risk of injury under the CPSA ("section 30(d) finding").[7]

[7]Section 30(d) of the CPSA provides that a risk of injury which is associated with a consumer product and which could be eliminated or reduced to a sufficient extent by action under the Federal Hazardous Substances Act, the Poison Prevention Packaging Act of 1970, or the Flammable Fabrics Act may be regulated under the CPSA only if the Commission by rule finds that it is in the public interest to regulate such risk of injury under the CPSA.

These commenters also claim that the label proposed in the NPR appears to be the type of warning that Section 7 of the CPSA contemplates, since the NPR characterizes the risk of CO poisoning associated with generator emission as an "unreasonable risk of injury."[8]

Response: The FHSA defines "hazardous substance" as including any "substance or mixture of substances which (I) is toxic . . . if [it] may cause substantial personal injury or substantial illness during or as a proximate result of any customary or reasonably foreseeable handling or use . . . ." Hazardous substances are misbranded if they do not bear the labeling required by section 2(p)(1) of the FHSA, 15 U.S.C. § 1261(p)(1). In order to label a product under the authority of the FHSA, the product must constitute or contain a hazardous substance.

---

[8]Section 7(a) of the CPSA provides that the Commission may promulgate a consumer product safety standard requiring that a consumer product be marked with or accompanied by clear and adequate warnings or instructions. Any requirement of such a standard is to be "reasonably necessary to prevent or reduce an unreasonable risk of injury associated with such product." Id.

The commenters analogize the labeling of portable generators to the labeling of charcoal packaging under the FHSA, in that charcoal, when burned, generates carbon monoxide. A significant difference between charcoal and portable generators, however, is that charcoal, as a substance which is toxic, constitutes a hazardous substance, and its packaging is therefore required to be labeled under the FHSA. In contrast, portable generators, when sold, are empty. Portable generators as sold thus do not contain any hazardous substance, or any substance, such as gasoline, that would produce the hazardous substance. A more appropriate analogy to portable generators might be gasoline containers that, when sold empty, are subject to the authority of the CPSA. Because the risk of injury associated with carbon monoxide poisoning from portable generators cannot be eliminated or adequately reduced by action under the FHSA, no finding under section 30(d)of the CPSA is required.

Commenters also suggest that the label proposed in the NPR appears to be the type of warning that Section 7 of the CPSA contemplates, since the NPR characterizes the risk of CO poisoning associated with generator emission as an "unreasonable risk of injury." Section 27(e) of the CPSA authorizes the Commission to issue rules requiring a consumer product manufacturer to provide the Commission and consumers with "performance and technical data related to performance and safety as may be required to carry out the purposes of this Act." One of the purposes of the CPSA, as provided in section 2(b)(1) of the CPSA, is "to protect the public against unreasonable risks of injury associated

with consumer products." The risk of CO poisoning posed by portable generators was fully addressed in the NPR (71 FR 50003) and the use of section 27(e) to protect the public against risk of injury is completely appropriate. This is not to say that it would be inappropriate to adopt a CO warning label for generators under section 7 of the CPSA. Indeed, the Commission intends to consider that approach in connection with its ongoing generator rulemaking (71 FR 74472).

2. Scope and Definition Issues

Comments: Two comments address scope and definition issues related to the proposed rule. One comment seeks clarification on whether fuel-cell portable generators are included within the scope of the rule. Another comment proposes that the definition of a "portable generator" reflect the definition within Underwriters Laboratories' Outline of Investigation for Portable Engine-Generator Assemblies, UL 2201.

Response: The CPSC rule is intended to generally cover the same range of portable generators as UL 2201. Therefore, Section 1407.2(b) is revised to read, "A portable generator is an internal combustion engine-driven electric generator rated no higher than 15 kilowatts and 250 volts that is intended to be moved for temporary use at a location

where utility-supplied electric power is not available. It has receptacle outlets for the alternating-current (AC) output circuits, and may have alternating- or direct-current (DC) sections for supplying energy to battery charging circuits." As specified in this definition, portable generators that are covered under this rule must have an internal combustion engine and receptacle outlets for AC output circuits. (The generator may have other outlets, for example, for low voltage DC accessories.) Fuel-cell portable generators are not be covered by the rule. The rule also does not cover generators that fall within the definition of "motor vehicle equipment," or otherwise fall outside the Commission's jurisdiction under the CPSA.

3. Effective Date of Rule

Comments: Three comments from portable generator manufacturers state that they will need at least six months, rather than the 90 days proposed in the NPR, from issuance of the final regulation in the *Federal Register* to comply with the new requirements.

Response: As noted by the staff of the CPSC Directorate for Economic Analysis, the time and resources required by manufacturers to redesign their portable generator labels are likely to be low since the content and

format of the labeling will be specified in the rule. The Commission, therefore, believes that most manufacturers should be able to comply with the requirements within 90 days of publication of the final rule. Nevertheless, some manufacturers may have to reschedule other work and shift resources such as labor from other projects. There would be some costs associated with these adjustments and these costs could be alleviated somewhat by delaying the effective date of the rule. To provide some relief to manufacturers that might have trouble incorporating the label change within 90 days, the Commission has decided to post-pone the effective date of the rule such that the label would be required on any portable generator manufactured or imported 120 days after the publication of the final rule in the *Federal Register*.

4. Labeling Text Issues

a) Multiple Languages

Comments: Five comments address the issue of whether the message text of the proposed labeling should also be required in a language other than English. Two comments support the addition of other languages, and one of these suggests that Spanish be the second language to include. Two comments oppose requiring additional languages. The

remaining comment does not take a position on the matter, but suggests that Spanish is the appropriate language to include if another language is added.

Response: The staff's previous analyses of generator-related incident data have revealed no pattern of incidents involving people who could not read English. To confirm this, the staff of the CPSC Directorate for Epidemiology (EP) selected and thoroughly examined a random sample of 25 out of 150 in-depth investigations into generator-related CO-poisoning deaths that occurred in the 2002 to 2005 time frame. None of the examined investigation reports described the victims' literacy in English, Spanish, or any other language. Consequently, these investigations provide no basis for concluding that labeling in Spanish would have prevented deaths.

According to the 2000 U.S. census, most people who speak a language other than English at home speak Spanish, with Chinese ranking a very distant second (Shin & Bruno, 2003).[9] Additionally, the National Center for Education Statistics (NCES) has found that about 35 percent of

[9] Among the 262.4 million people in the U.S. aged 5 years or older, 47.0 million (18 percent) speak a language other than English at home. About 60 percent of these (28.1 million) speak Spanish and about 0.4 percent (2.0 million) speak Chinese.

American adults who have below basic literacy in English prose[10] spoke Spanish before starting school; only 9 percent could not speak either English or Spanish (NCES, 2005). Adding Spanish to an English-language warning label, therefore, would be expected to improve its readability among the U.S. population more than adding any other language. Nevertheless, the overall impact of adding Spanish to a label may be small. In the case of portable generators, Synovate DuraTrend™ consumer survey data obtained by the EC staff show that only 5.6 percent of generator purchasers in 2005 were Hispanic. Furthermore, many of these people are likely to be literate in English; for example, less than half of all adult Hispanics in the U.S. have below basic literacy in English prose (NCES, 2005). Thus, Hispanics with below basic literacy in English prose—the sub-population most likely to include individuals who cannot read English yet can read Spanish, and who would potentially benefit the most from the addition of Spanish to the proposed warning label—almost certainly represent less than five percent of all generator purchasers in the U.S., and may comprise substantially less than this. Some of

[10] Those with below basic literacy in English prose lack the skills necessary to perform simple everyday literacy activities such as reading and understanding information in short commonplace continuous texts.

these people may also lack basic literacy in Spanish and, therefore, would be unable to read a label even if it included written Spanish. Despite these findings, the Commission does not dismiss the potential usefulness of providing the information in the labeling in Spanish, especially in regions of the country with large Hispanic populations. Thus, the rule does not prohibit manufacturers from providing a Spanish-language version of the labeling in addition to the prescribed English-language label. If the product label is provided by the manufacturer in additional languages, however, the staff believes that additional-language versions of the label should appear adjacent to or below the English-language version of the product label. This formatting is consistent with ANSI Z535.4 - 2002, the most recent published version of the *American National Standard for Product Safety Signs and Labels*. The staff further recommends that any additional-language versions of the label, whether they be on the product or on the generator package, be no larger than the English-language version of the label. Thus, the final rule includes these requirements at § 1407.3(a)(1) and § 1407.3(a)(2).

b) Signal Word Choice

Comments: Four comments assert that the signal word WARNING is more appropriate than DANGER for the proposed labeling. Arguments made by the commenters include that the use of DANGER is inconsistent with the hierarchy specified in the ANSI Z535 series of standards and that its use might reduce the perceived risk associated with the WARNING hazards of fire during refueling, electrocution from use in wet conditions, and electrocution from connection to a commercial power source.

Response: According to the ANSI Z535 series of standards, the selection of a signal word for a hazard label should be made based on the seriousness of the hazard situation or scenario. For example, ANSI Z535.4 - 2002, the most recent published version of the *American National Standard for Product Safety Signs and Labels*, defines DANGER as an "imminently hazardous situation which, if not avoided, will result in death or serious injury" (Section 4.13.1). The latest revision of ANSI Z535.4 clarifies that use of the term "will" in this definition indicates an event that is nearly, but not absolutely, certain (Annex E, due for publication 2006). While the mere presence of carbon monoxide in portable generator exhaust could lead to death or serious injury, the use of generators indoors—the hazard

scenario specifically highlighted in the label—would almost certainly result in death or serious injury due to a generator's high rate of CO production (for example, see Inkster, 2004). The CPSC continues to believe, therefore, that DANGER is the appropriate signal word for the proposed labeling.

The Commission cannot confirm the assertion that using DANGER for the CO poisoning hazard would necessarily reduce the perceived hazard associated with the WARNING hazards mentioned. One could argue instead that the use of DANGER simply increases the perceived hazard associated with CO poisoning without having any effect on consumer perceptions related to the other hazards being warned about on the product. Additionally, the selection of a signal word for a given hazard is supposed to be based on the standard signal-word definitions (for example, those used in ANSI Z535.4), which denote the seriousness of the hazard situation or scenario, not on how the signal word might impact the perceptions of hazard labels that use other signal words. To the extent that a hazard situation or scenario is serious enough to demand the use of DANGER, one would expect and hope that people exposed to the hazard label would correctly interpret this as meaning that the hazard situation is more

serious than a hazard label that relies on a less serious signal word such as WARNING or CAUTION. Accordingly, the final rule requires that the label include the signal word DANGER.

c) Message Text Issues

Comments: Five comments are associated with the specific message text of the proposed labeling. Two comments express concerns that the message text has not been independently tested—for example, through the use of focus groups—and suggest various alternatives to the wording of this text. Both also argue that the phrase, " . . . WILL KILL YOU IN MINUTES" is not accurate. One comment includes the results of focus group testing, performed on low-literacy individuals by a contractor for the U.S. Environmental Protection Agency (EPA), which found that some people had difficulty understanding the phrase "partly enclosed area" and misinterpreted the word "gas" as gasoline. The contractor recommended that "partly enclosed area" be deleted from the label. One comment states that the label does not alert consumers to the symptoms of CO poisoning or refer users to the manual for additional instructions. Another comment states that the phrase, "Please read the manual before use," is already attached to

the generator in another label and that, therefore, the packaging label should be identical to the product label if one is used. One comment recommends the addition of the phrase, "FOR OUTDOOR USE ONLY," after the initial sentence of the proposed labeling.

Response: As referenced in the comment summary, above, an independent contractor performed focus group testing on the proposed product label with low literacy individuals as part of the EPA's efforts to develop a flood-cleanup brochure. This testing identified two specific comprehension problems with the message text of the proposed labeling. First, testing revealed that some low-literacy individuals had difficulty understanding the phrase "partly enclosed area." The available CPSC data on CO poisoning deaths associated with portable generators show that most incidents in which the generator was reportedly used in an enclosed or partially enclosed area occurred either within the home or in a garage or enclosed carport (Marcy & Ascone, 2005). Thus, the staff believes it would be acceptable to remove "partly enclosed area" from the proposed labeling, as recommended by the EPA's contractor. The staff is concerned, however, about simply deleting this phrase, since

its absence could mislead some into believing that generators are only hazardous if used in fully enclosed areas. Thus, the staff recommends adding the phrase, "EVEN IF doors and windows are open," to the end of the revised portion of the warning. The entire relevant statement, therefore, is changed in the final rule from, "NEVER use in the home or in partly enclosed areas such as garages," to, "NEVER use inside a home or garage, EVEN IF doors and windows are open."

The testing also revealed that "gas" may be misinterpreted as "gasoline" by some low literacy individuals. To address this comment, the label is revised to read as follows: "Exhaust contains carbon monoxide, a poison gas you cannot see or smell," with, "Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell." Because they address the specific comprehension problems identified with the message text during testing, these revisions should make the proposed labeling more understandable to all generator users. The CPSC staff believes that an explanation of the intended function of a portable generator, which the EPA's testing contractor also recommended adding, is unnecessary for a product label since people who do not know this information

are unlikely to purchase, rent, borrow, or otherwise use a portable generator. Thus, the final rule does not include an explanation of the intended function of a portable generator.

The staff agrees that the sentence, "Using a generator indoors WILL KILL YOU IN MINUTES," is questionable because death may occur in a longer time frame than what most people would deem "in minutes" and because generator use indoors may result in severe CO poisoning rather than death. The staff is also concerned that people who have previously used a generator indoors and survived could question the credibility of a label that states death is essentially inevitable. If the label is not credible, people may choose to ignore the safety message. Therefore, the Commission has revised this statement to read, "Using a generator indoors CAN KILL YOU IN MINUTES." This revision has no effect on the appropriateness of using DANGER as the signal word for this label, as discussed earlier, since the use of generators indoors would still almost certainly result in death or serious injury due to a portable generator's high rate of CO production. The revised phrase simply emphasizes the possibility that death can occur within minutes.

In its 2003 memorandum that proposed warning labels to accompany portable generators, the CPSC staff specifically recommended against including a description of CO-poisoning symptoms within the product label because this information would add a substantial amount of text to the label and was believed to be of limited value for a label to be affixed to the product itself (Smith, 2003). The staff continues to support this position. Regarding the statement, "See product manual for more details," which originally appeared at the bottom of the on-product label in the staff's 2003 memorandum (Smith, 2003), the staff does not believe this statement should be required on portable generators because the information that is provided in the labeling required in this final rule addresses the key safety information of which people must be aware when using a generator and generator manufacturers may include a statement that refers users to the product manual elsewhere on the generator. As pointed out in one public comment, some manufacturers already include the phrase, "Please read the manual before use," in other generator labels. For the packaging label, however, the statements, "Avoid other generator hazards. READ MANUAL BEFORE USE," are needed since this label may very well be the only label on the packaging that will alert

the purchaser to possible hazards associated with generator use. Therefore, the provision has been retained in the final rule.

The CPSC staff believes it would be inappropriate to add the phrase, "FOR OUTDOOR USE ONLY," after the initial sentence of the message text in the proposed labeling. Placing this phrase after the initial sentence interrupts the logical flow of the warning from the explanation of the hazard situation to the descriptions of the appropriate hazard avoidance behaviors. A more appropriate location for this phrase, if it were used, would be at the beginning of the message text as the first sentence of the warning. However, the staff is concerned that using this phrase as the first sentence would tend to de-emphasize the description of the hazard situation and its consequences (that is, "Using a generator indoors CAN KILL YOU IN MINUTES."), could lead people to stop reading further because it is a highly familiar phrase that people are likely to believe they already understand, and is redundant with the already-present and more-detailed admonition to use the generator outside and far away from windows, doors, and vents. Thus, although this statement would not add a substantial amount of text to the label, the Commission does

not believe it should be added to the labeling and the statement is not included in the final rule. However, manufacturers are not prohibited from including a statement of this kind elsewhere on the product, packaging, or product manual.

5. Labeling Pictogram and Symbol Issues

a) Prohibition Symbol Choice

Comments: Four comments propose the use of a circle-slash symbol rather than an "X" symbol to indicate prohibited actions in the pictograms that appear in the proposed labeling. Arguments made within these comments in favor of the circle-slash symbol include the fact that it is consistent with the ANSI Z535 series of standards, is internationally recognized, and obscures less of the underlying pictogram than an "X." One comment states that a transparent circle-slash symbol may be superior since it does not obscure the underlying pictorials.

Response: The CPSC staff acknowledges that the ANSI Z535 series of standards recommends the use of a circle-slash symbol to indicate prohibited actions in pictograms. When developing the proposed labeling, the CPSC staff chose to use "X" symbols rather than circle-slash symbols because both the circle-slash and "X" symbols are commonly

recognized as conveying the prohibition concept (Dreyfuss, 1972; Wogalter & Leonard, 1999), there was no evidence that English-reading consumers would have difficulty understanding the meaning of an "X" symbol, and the only known evidence of comprehension problems with either prohibition symbol were those encountered with the circle-slash symbol by some Latin American individuals during charcoal-pictogram testing previously performed for the CPSC (Requirements for Labeling of Retail Containers of Charcoal, 1996). The staff also found that circle-slash symbols tended to obscure more of the underlying pictograms than did "X" symbols of the same size. For example, the circle portion of the circle-slash symbols tended to obscure the outlines of the home and garage pictograms, making these portions of the pictograms difficult to discern.

Since publication of the *Federal Register* notice regarding the NPR, the staff has become aware of an internal Douglas Aircraft research report that identified possible comprehension problems with the use of an "X" to indicate prohibition. For example, the researchers found that a graphic using an "X" to indicate that a part should not be touched was misinterpreted by some as meaning the opposite, indicating where the person *should* touch (Johnson, 1974, as

cited in Johnson, 2006). In light of this research, the staff agrees that the use of "X" symbols rather than circle-slash symbols to indicate prohibition in the proposed labeling may not be preferable. The final rule, therefore, includes the opaque circle-slash symbols rather than "X" symbols. Additionally, to avoid problems with the circle-slash obscuring the outlines of the home and garage, the final rule uses smaller circle-slash symbols, centered over the generator pictograms. Although a transparent circle-slash symbol would not obscure the underlying symbol, its use is inconsistent with the prohibition symbol recommended in the ANSI Z535 series of standards.

b) Use of Hazard-Avoidance Pictograms

Comments: Three comments are associated with the staff's decision to use pictograms depicting hazard avoidance behavior in the proposed labeling. Two comments state that these pictograms have not been independently tested, and question whether the pictograms of the generator will be readily recognized. One of these comments suggests that the standard hazardous gas/vapors pictogram, which shows a person inhaling gas, might be a better choice since it had undergone successful consumer testing. One comment, which includes the results of EPA-sponsored focus group

testing on the proposed product label, reports that some low-literacy individuals had difficulty recognizing the generator pictogram. The contractor recommended enlarging this pictogram to improve the likelihood that it will be correctly identified.

Response: The CPSC staff had originally considered the use of the hazardous gas/vapors pictogram referred to in the comments, but expressed reservations about its use since the gas in the pictogram is visible even though carbon monoxide is not (Smith, 2003, 2006). The staff continues to be concerned about this potential for confusion. In addition, although testing has revealed that most people can recognize the referenced pictogram as indicating hazardous gas or vapors (Mayer & Laux, 1989), this pictogram provides no information regarding appropriate hazard-avoidance behaviors. In fact, since this pictogram could indicate hazardous gases with varying degrees of lethality, the appropriate hazard-avoidance behavior may vary substantially among different hazardous gases. For example, some products that release hazardous gases might be safely used within an open garage, but this is not true for an operating portable generator. The final rule uses pictograms depicting

appropriate and inappropriate behaviors specific to portable generators to avoid this ambiguity.

As discussed earlier, an independent contractor performed focus-group testing on the proposed product label with low-literacy individuals as part of the EPA's efforts to develop a flood-cleanup brochure. The only identified problem with the pictograms that appear in the proposed labeling was that some people had difficulty recognizing the graphic of the generator. These test results, however, almost certainly underestimate the extent to which the generator graphic would be recognized in a real-life scenario. For example, testing was not performed with the label affixed to a generator. When presented in the appropriate context, generator graphics are more likely to be recognized (Wogalter, Silver, Leonard, & Zaikina, 2006). Additionally, the EPA testing found that some of the participants in the testing did not even know what a generator was. People who do not know the intended function of a portable generator are unlikely to purchase, rent, borrow, or otherwise use a portable generator, and would not be expected to correctly identify a graphic of this product. Nevertheless, to improve the likelihood that people will correctly identify the generator graphic as a portable

generator and to increase the overall legibility of the pictograms, the CPSC has slightly increased the size of the pictograms in the final rule, as recommended by the EPA's testing contractor. The Commission also notes that Section 1407.3(a)(1) of the final rule specifies that "[a] different representation of the generator [within the proposed labeling] may be substituted for accuracy if consumers are more likely to recognize the substituted representation as the generator to which this label is affixed." Manufacturers, therefore, may substitute a graphic of the specific generator to which the label will be affixed if they so choose.

c) Other Hazard-Avoidance Pictogram Issues

Comments: Five comments are associated with specific features of the hazard-avoidance pictograms that appeared within the proposed labeling. Two comments suggest deleting the symbol depicting the use of a generator within a garage. This pictogram, according to three comments, could be interpreted as meaning that one should not store the generator in a garage. Two comments claim that the two-headed arrow graphic that appears in the pictogram depicting appropriate behavior could be misinterpreted. One of these states that the two-headed arrow graphic could be

interpreted as meaning that use both in and away from the home is acceptable; the commenter suggests that this arrow be replaced with a single-headed arrow that points away from the home. The other comment claims that this graphic could be interpreted as meaning that the person should connect the generator by electrical wire to a commercial power supply as a backup, and recommended deleting the pictogram entirely.

Response: The Commission believes that both pictograms that depict inappropriate behaviors—one showing generator use within a home or enclosed space and one showing generator use within a garage—are necessary to convey the key safety message. Relying solely on the pictogram of the generator within a home or enclosed space to indicate inappropriate behavior, as recommended by the commenters, could lead people to believe that generators are only hazardous if used within a completely enclosed space. Many CO-poisoning deaths associated with portable generators occurred when the generator was being used in a garage with the door at least partially open. The pictogram depicting generator use in the garage as being inappropriate directly addresses incidents of this type. Although the CPSC acknowledges that one could infer from these pictograms that generators should not be stored in the home or garage,

alternative pictograms such as the poisonous gas/vapors pictogram are also open to various interpretations regarding appropriate and inappropriate behaviors specific to portable generators, as discussed in the response to the previous topic. As demonstrated by the earlier discussion of comprehension problems encountered with common prohibition symbols, virtually no hazard pictogram or symbol will be understood by all people. For this reason, explanatory text is very often recommended or required,[11] especially for complex hazards (Wogalter, Silver, Leonard, & Zaikina, 2006). The CPSC believes that the explanatory message text that appears in the label should limit the extent to which

[11] ANSI Z535.3 – 2002 requires explanatory text for any symbol without demonstrated understandability; for example, one that is not understood by at least 85 percent of the target audience using the methodology specified in Annex B of the standard. Research suggests that few safety symbols can meet this requirement, so accompanying text is almost always required.

misinterpretations of the pictograms would prevent people from understanding the overall message of the labeling.

Regarding the use of a double-headed arrow in the pictogram depicting the appropriate use of a portable generator, the *American National Standard Criteria for Safety Symbols*, ANSI Z535.3, recommends the consistent use of arrow graphics to represent different types of movement or spatial relationships. Single-headed arrows are used to represent the motion of objects or components or to represent the exertion of pressure or force; in contrast, double-headed arrows are used to represent the idea of keeping a safe distance away from a hazard (ANSI Z535.3-2002, Figure A1). Thus, the use of a double-headed arrow is appropriate, and the direct replacement of the double-headed arrow with a single-headed one, as recommended by one commenter, would suggest the movement of the home toward the generator, which is opposite the intended meaning and could create critical confusion among the intended audience. Despite this, in the final rule issued today, the original appropriate-use pictogram is replaced with a pictogram that avoids the possible misinterpretations identified by the commenters yet remains consistent with ANSI Z535.3. This pictogram employs a single-headed arrow but places the arrow

on the opposite side of the generator pictogram to suggest the movement of the generator away from the home. The length of the arrow has also been shortened so the generator pictogram is not located immediately adjacent to the graphic of the home.

6. Explicit Safe Distance

Comments: Six comments point out that the proposed labeling does not include an explicit distance (for example, measured in feet) that should be maintained between the generator and the home or other partially enclosed area. Some suggest that this distance could be inserted within the message text or within the pictogram depicting the generator being kept away from the home. One comment suggests a minimum distance of 10 feet; another comment suggests at least 15 feet.

Response: The CPSC agrees that explicitly identifying a safe operating distance between the generator and the home or other partially enclosed area would be more useful than relying on terms such as "far," but has been unable to develop a consensus as to what distance is adequate given the widely varying conditions under which portable generators may be used. As discussed in the staff's 2006 briefing package on portable generator safety, some portable

generator manufacturers currently provide minimum clearance requirements for placement of the generator; however, these distances appear to represent the clearances needed to allow for adequate combustion and cooling airflow, not to avoid CO poisoning (Buyer, 2006). Variables such as the speed and direction of wind relative to openings to indoor spaces and the relative proximity of other structures to the generator complicate attempts to define a reasonably safe distance.

In a study of nonfatal CO-poisoning incidents following two major hurricanes in 2005, the Centers for Disease Control and Prevention (CDC) found that half of those interviewed who had been involved in generator-related incidents had placed the generator outside in the open, but that all of these individuals had placed the generator within seven feet of the home (CDC, 2006). Thus, a "reasonably safe" distance likely would be greater than seven feet. However, available data do not allow the Commission to reach consensus on how much farther than seven feet would constitute a reasonably safe distance. The phrase "far away," used in the label required by this final rule, while not as explicit as a specified distance, still emphasizes the need to keep the generator well away from,

rather than immediately outside, the home or other partially enclosed areas.

7. Labeling Placement

Comments: Three comments address the proposed location or placement of the label on the product. Two comments state that it is not technically feasible to meet a requirement that the label be placed on a part of the generator that, if removed, would impair the operation of the generator. The commenters propose an alternative requirement that the label be placed on a part of the portable generator that cannot be removed without the use of tools. One comment suggests that the label be located close to the "on/off" switch, the starter, or the power outlets, and suggests that the label be more "active" by requiring the user to take an action that draws attention to the label each time the generator is used.

Response: The Commission is not opposed to the commenters' proposed alternative requirement that the label be placed on a part that cannot be removed without the use of tools. Therefore, Section 1407.3(a)(1)(iii)(A) of the final rule states, "On a part of the portable generator that cannot be removed without the use of tools." Regarding the comment about making the label more "active" by requiring

the user to take an action that draws attention to the label each time the generator is used, the Commission believes that such a requirement is unnecessary at this time since the label is already required to be placed in a location that is prominent and conspicuous to an operator while performing at least two of the following tasks: filling the fuel tank, accessing the receptacle panel, and starting the engine (See section 1407.3(a)(1)(iii)(B) of the final rule).

8. Need for Packaging Label

Comments: Two comments propose that the requirement for a packaging label be dropped from the rule. Both believe this label is unnecessary since the packaging will be discarded.

Response: The intent of the packaging label is to directly provide potential purchasers of portable generators with information at the point of purchase emphasizing the danger of CO poisoning, and to reinforce the warning when the generator is removed from the packaging at home, not to assist consumers while they are operating the generator after the packaging is discarded. The packaging label provides the CO poisoning information irrespective of sales staff interaction or other messaging at the point of sale. Without the information presented by the packaging label,

purchasers may not discover until they are home that they do not have an appropriate place to operate the generator. Accordingly, the proposed requirement for the packaging label is retained in this final rule.

9. Missing Manual Warning

Comments: One comment notes that a previous CPSC staff memo included a recommendation for a product-manual warning, which included information about CO-poisoning symptoms, and that the NPR does not include a recommendation for such a warning.

Response: The rule does not include specific recommendations for CO-poisoning warnings to appear within the manuals that accompany portable generators because prior analyses of the CO-poisoning information provided on the product and within the product manuals found that the product labeling was often far more deficient (Smith, 2002). Since the on-product labeling is available to consumers even after the product manual is lost, discarded, or otherwise not available, improved product labels are of paramount importance. The Commission does agree, however, that providing more detailed information about CO poisoning within the product manual, including information about the symptoms of CO poisoning, would be advantageous, and the

staff may consider additional requirements of this type as part of the CPSC's ongoing activities associated with improving portable generator safety.

10. Extension Cord Warning

Comments: One comment notes that increasing the distance between the generator and any partially enclosed spaces necessarily increases the distance between the generator and the load, which could result in some consumers using extension cords with insufficient capacity. The commenter suggests that a warning label that states, "ONLY USE PROPERLY SIZED EXTENSION CORDS IN GOOD CONDITION," be affixed to the generator's electrical panel.

Response: The Commission agrees that the capacity and condition of extension cords to be used with portable generators must be adequate to support the intended load and allow the generator to be kept far away from homes and other partially enclosed areas. However, this issue is outside the scope of this rulemaking.

11. Alternatives to Labeling

Comments: Three comments suggest that labeling alone is not sufficient to address the CO-poisoning hazard and recommend technical solutions such as reduced CO emissions

or integrated CO monitors that will automatically shut off the generator if necessary.

Response: Specific technical approaches to addressing the CO poisoning hazard associated with portable generators are outside the scope of this rule and are addressed in a separate Commission rulemaking commenced with the recent publication of an advance notice of proposed rulemaking, 71 FR 74472 (December 12, 2006).

L. Conclusion

For the reasons stated in this preamble, the Commission finds that a requirement for a carbon monoxide warning statement on portable generators is necessary to help protect the public against the risk of CO poisoning associated with such products.

List of Subjects in 16 CFR Part 1407

Consumer protection, labeling.

Therefore, for the reasons stated in the preamble, the Commission amends Title 16 of the Code of Federal Regulations by adding a new Part 1407:

PART 1407-PORTABLE GENERATORS: REQUIREMENTS TO PROVIDE PERFORMANCE AND TECHNICAL DATA BY LABELING

Sec.

Authority: 15 U.S.C. 2076(e).

§ 1407.1 Purpose, Scope, and Effective Date.

This part 1407 establishes requirements under section 27(e) of the Consumer Product Safety Act (15 U.S.C. 2076(e)) for manufacturers to provide consumers with a specified notification concerning the carbon monoxide poisoning hazard associated with the use of portable generators. The notification is intended to provide consumers with technical and performance information related to the safety of portable generators. This part applies to any generator manufactured or imported on or after [INSERT DATE 120 DAYS FROM ISSUANCE OF FINAL RULE].

§ 1407.2 Definitions.

(a) The definitions in section 3 of the Consumer Product Safety Act (15 U.S.C. 2052) apply to this part 1407.

(b) A portable generator is an internal combustion engine-driven electric generator rated no higher than 15 kilowatts and 250 volts that is intended to be moved for temporary use at a location where utility-supplied electric power is not available. It has receptacle outlets for the alternating-current (AC) output circuits, and may have alternating- or direct-current (DC) sections for supplying energy to battery charging circuits.

§ 1407.3 Providing performance and technical data to purchasers by labeling.

(a) Notice to purchasers. Manufacturers of portable generators shall give notification of performance and technical data related to performance and safety to prospective purchasers of such products at the time of original purchase and to the first purchaser of such product for purposes other than resale, in the manner set forth below.

(1) On-product label. The CO poisoning hazard label shown in fig. 1 shall be used on the product. A different representation of the generator may be substituted for accuracy if consumers are more likely to recognize the substituted representation as the generator to which this label is affixed. Alternate-language versions of this label may appear on the product in addition to the label specified in figure 1. If the product label is also provided by the manufacturer in additional language(s), it shall appear adjacent to or below the English-language version of the product label, and shall be no larger than the English-language version of the label. Versions of the product label that are in a language other than English may appear without the pictograms that appear in the English-language versions.

(I) The signal word "DANGER" shall be in letters not less than 0.15 inch (3.8 mm) high. The remaining text shall be in type whose uppercase letters are not less than 0.1 inch (2.5 mm) high.

(ii) The signal word "DANGER" shall appear in white letters on a safety red background. The safety alert symbol shown in fig. 2 shall appear immediately before and next to the signal word and be no smaller than the height of the signal word with the base of the triangle on the same horizontal line as the base of the signal word. The solid portion of the triangle (within the lines of the triangle, around the exclamation mark) shall be white and the exclamation mark shall be safety red. The prohibition circle-slash symbols shall be opaque.

(iii) The on-product hazard label shown in fig. 1 shall be located:

(A) On a part of the portable generator that cannot be removed without the use of tools, and

(B) On a location that is prominent and conspicuous to an operator while performing at least two of the following actions: filling the fuel tank, accessing the receptacle panel, and starting the engine.

(iv) The on-product hazard label shown in fig. 1 shall be designed to remain permanently affixed, intact, legible, and largely unfaded in the environment in which the product is expected to be operated and stored over the life of the product.

(2) Carbon monoxide poisoning hazard label for package. The CO poisoning hazard label shown in fig. 3 shall be affixed to the principal display panel(s) of the package, as well as the surface containing the top flaps of the package. The principal display panel(s) of the package is the portion(s) of the outer packaging that is designed to be most prominently displayed, shown, presented, or examined under conditions of retail sale. Any panel of the package that includes text in a language other than English shall also include a CO poisoning hazard label in that language. Alternate-language versions of the label, in addition to the label specified in figure 3, may also appear on the top flaps of the package as long as they are physically separate from one another. A different representation of the generator may be substituted for accuracy if consumers are more likely to recognize the substituted representation as the generator contained within the packaging.

(I) The signal word "DANGER" shall be in letters not less than 0.15 inch (3.8 mm) high. The remaining text shall be in type whose uppercase letters are not less than 0.1 inch (2.5 mm) high.

(ii) The signal word "DANGER" shall appear in white letters on a safety red background. The safety alert symbol shown in fig. 2 shall appear immediately before and next to the signal word and be no smaller than the height of the signal word with the base of the triangle on the same horizontal line as the base of the signal word. The solid portion of the triangle (within the lines of the triangle, around the exclamation mark) shall be white and the exclamation mark shall be safety red. The prohibition circle-slash symbols shall be opaque.

[INSERT FIGURES 1-3]

List of Relevant Documents

1. Memorandum from Timothy P. Smith, Engineering Psychologist, Division of Human Factors, Directorate for Engineering Sciences, to Janet L. Buyer, Project Manager, Division of Combustion and Fire Sciences, Directorate for Engineering Sciences, "Product labels for generators to address carbon monoxide poisonings," May 26, 2006.
2. Memorandum from Robert Franklin, Economist, Directorate for Economic Analysis, "Economic Issues Related to a CO Warning Label on Portable Generators," December 27, 2006.

3. Memorandum from Natalie E. Marcy, Mathematical Statistician, Division of Hazard Analysis, Directorate of Epidemiology, and Debra S. Ascone, Mathematical Statistician, Division of Hazard Analysis, Directorate for Epidemiology, to Janet Buyer, Project Manager, Division of Combustion and Fire Sciences, Directorate for Engineering Sciences, " Incidents, Deaths, and In-Depth Investigations Associated with Carbon Monoxide from Engine-Driven Generators and Other Engine-Driven Tools, 1990-2004," December 1, 2005.

4. Memorandum from Robin L. Ingle, Health Statistician, Division of Hazard Analysis, Directorate for Epidemiology, to Janet Buyer, Project Manager, Division of Combustion and Fire Sciences, Directorate for Engineering Sciences, "Non-fire Carbon Monoxide Fatalities Associated with Engine-Driven Generators and Other Engine-Driven Tools in 2004 and 2005," January 13, 2006.

5. Memorandum from Robert Franklin, Directorate for Economic Analysis, "Effective Date of CO Warning Label for Generators - Response to Comments," December 27, 2006.

Dated: January 5, 2007

Todd A. Stevenson, Secretary
Consumer Product Safety Commission

Figure 1 On-product carbon monoxide poisoning hazard label

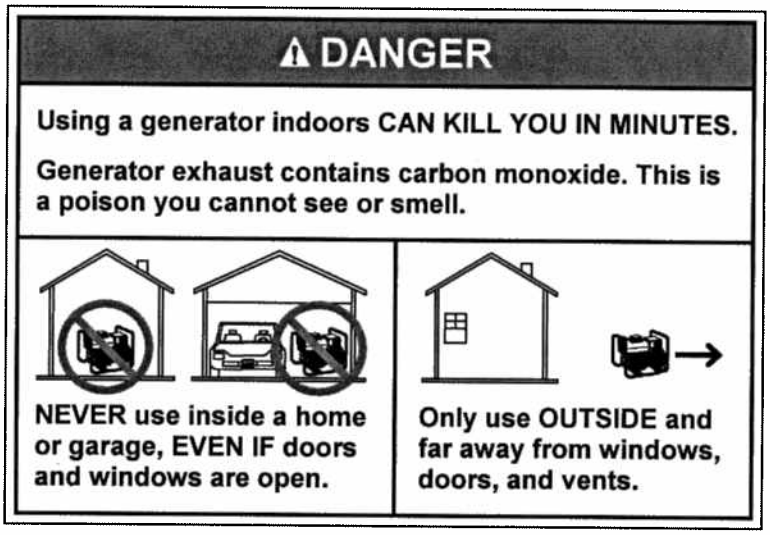

Figure 2 Safety Alert Symbol

Figure 3 Carbon monoxide poisoning hazard label for package